

AMENDMENTS TO THE CLAIMS

1 - 14 (cancelled)

15. (currently amended)

An end effector according to claim 13 for a robot for manipulating a container, said effector comprising:

a vacuum plenum comprising a mounting plate, a surround mounted to said plate, a port passing through said plate, and a means for drawing vacuum connected to said port;

a first gripping element mounted to the plate outboard of said surround, said first gripping element comprising a stationary blade having a smooth surface, said stationary blade being rigidly mounted generally perpendicularly to the plate; and

a second gripping element comprising a movable blade having a smooth surface, said movable blade being movably mounted generally perpendicular to the plate outboard of said surround, and wherein said movable blade is positioned opposite the first gripping element; and

said end effector further comprising a plurality of suction cups located in generally perpendicular relation to the plate and wherein said suction cups are positioned to engage the container, said suction devices cups being connected to a vacuum means.

16. (currently amended)

An end effector according to claim 13 for a robot for manipulating a container, said effector comprising:

a vacuum plenum comprising a mounting plate, a surround mounted to said plate, a port passing through said plate, and a means for drawing vacuum connected to said port;

a first gripping element mounted to the plate outboard of said surround, said first gripping element comprising a stationary blade having a smooth surface, said stationary blade being rigidly mounted generally perpendicularly to the plate; and

a second gripping element comprising a movable blade having a smooth surface, said movable blade being movably mounted generally perpendicular to the plate outboard of said surround, and wherein said movable blade is positioned opposite the first gripping element; and

said end effector further comprising a plurality of piercing points, each said point having a barbed portion, said points being retractably mounted to the plate, whereby the plurality of points are adapted to pierce a container.

17. - 19 (cancelled).

20. (previously presented)

An end effector for a robot, comprising:

a plate mounted to the robot, said plate having a first surface and an oppositely positioned second surface;

a vacuum port located on the first surface of the plate and passing through the plate to the second surface, said vacuum port being connected to a vacuum source;

a surround located on the second surface of the plate, said surround enveloping the vacuum port at the second surface of the plate, said surround comprises a subframe, said subframe located between the surround and the plate;

a first gripping element mounted to the second surface in substantially perpendicular relationship to the plate, said first gripping element being located outboard the surround;

a second gripping element positioned in spaced parallel relation opposite the first gripping element whereby said second gripping element is located outboard the surround.

21. (previously presented)

An end effector for a robot, comprising:

a plate mounted to the robot, said plate having a first surface and an oppositely positioned second surface;

a vacuum port located on the first surface of the plate and passing through the plate to the second surface, said vacuum port being connected to a vacuum source;

a surround located on the second surface of the plate, said surround enveloping the vacuum port at the second surface of the plate;

a first gripping element mounted to the surface in substantially perpendicular relationship to the plate, said first gripping element being located outboard the surround;

a second gripping element positioned in spaced parallel relation opposite the first gripping element whereby said second gripping element is located outboard the surround;

a pair of parallel mounting rails positioned substantially perpendicular to the plate, each of said parallel mounting rails having a plurality of vacuum cups mounted thereon whereby said vacuum cups are adapted to selectively apply a vacuum.

22. (currently amended)

An end effector for a robot, comprising:

a plate mounted to a ~~robot~~ said end effector, said plate having a first surface and an oppositely positioned second surface;

a vacuum port located on the first surface of the plate and passing through the plate to the second surface, said vacuum port being connected to a vacuum source;

a surround located on the second surface of the plate, said surround enveloping the vacuum port at the second surface of the plate;

a first gripping element mounted to the second surface in substantially perpendicular relationship to the plate, said first gripping element being located outboard the surround;

a second gripping element positioned in space parallel relation opposite the first gripping element whereby said second gripping element is located outboard the surround; and

a plurality of piercing points, said points being retractably mounted to the plate.

23. (cancelled)

24. (currently amended)

An end effector according to claim 22 further comprising a plurality of suction cups located on said ~~arm whereby said arm plate, and wherein said plate is~~ mounted in substantial perpendicular relationship to the ~~plate end effector;~~ and wherein each said suction cups on said plate has have means for drawing vacuum.

25. (previously presented)

An end effector for a robot for manipulating a container, said effector comprising:

a vacuum plenum comprising a mounting plate, a surround mounted to said plate, a port passing through said plate, and a means for drawing vacuum connected to said port;

a first gripping element mounted to the plate outboard of said surround, said first gripping element comprising a stationary blade having a smooth surface, said stationary blade being rigidly mounted generally perpendicularly to the plate; and

a second gripping element comprising a movable blade having a smooth surface, said movable blade being movably mounted generally perpendicular to the plate outboard of said surround, and wherein said movable blade is positioned opposite the first gripping element; and

a plurality of piercing points, each said point having a barbed portion, said points being retractably mounted to the plate, whereby the plurality of points are adapted to pierce a container.